United States Government **Department of Energy**

memorandum

DATE: March 10, 1997

REPLY TO ATTN OF: EH-53 (R. Sastry, 301-903-4664)

SUBJECT: Chemical Safety Concerns / Search of Occurrence Reporting and Processing System (ORPS)

TO: Distribution

Significant Occurrences

February, 1997

Class 1:

None

Class 2:

Brookhaven - symptoms from potential exposure to nicotine-like chemical

Additional:

At Livermore, there was an occurrence involving improper handling of explosives. At Savannah River, workers were potentially exposed to NOx.

These occurrences are further described below with additional information, including Occurrence Report (OR) numbers, provided in the Attachment.

A search of ORPS for occurrences having chemical safety relevance conducted for the month of February 1997 produced 20 reports representing potential chemical safety concerns. These occurrences are listed in the Attachment. There was one occurrence categorized as "Unusual" with the remainder identified as "Off-normal". The Office of Environmental Management (EM) was Cognizant Secretarial Office (CSO) for ten occurrences; Defense Programs (DP) reported nine; Energy Research (ER) had two; and Nuclear Energy (NE) one. The CSO designation may change after the distribution of this monthly memorandum, and this change will be reflected in Quarterly and Annual Reviews.

In order to determine which chemical safety occurrences represent more important (significant) Levels of Concern, a classification scheme has been developed. The definitions of these Classes are as follows:

Class 1 Occurrences characterized by an injury or exposure requiring hospital treatment, or confirmed, severe environmental effect; also occurrences that had the potential to cause these effects with all safety barriers down, except, for example, that no one was nearby to be injured or exposed, or escaped in time, or the climatic conditions were favorable;

Class Occurrences characterized by minor injury (first aid) or exposure, or minor environmental

2	damage; also occurrences that were near misses (where one additional safety barrier remained to prevent consequences) to those in Class 1;
Class 3	Potential precursors to the occurrences in Class 1 or 2;
Class 4	Minor occurrences such as leaks, spills, or releases, which may be significant in their frequency of occurrence though not in their consequences.

There was one Class 2 occurrence reported during February. There were nine Class 3 occurrences. Among the Class 3 occurrences, in addition to those noted previously, was a USQ determination at the Y-12 Plant due to the discovery of unscreened chemical hazards. An inadvertent halon release at Hanford resulted in three workers being sent for medical evaluations. A freon release at INEEL caused carbon monoxide alarms and an evacuation. A breathing air cylinder at Hanford was found to be contaminated with petroleum hydrocarbons.

Summary of Class 2 Occurrence:

Chemist Potentially Exposed to Nicotine-like Chemical (ER): (CH-BH-BNL-BNL-1997-0007) On February 11, 1997, at Brookhaven National Laboratory, a chemist was doing an experiment with a derivative of epibatadine, a potent nicotine-like chemical compound. The quantity of chemical compound the chemist was using was 5 mg in 3 ml of acetonitrile and she was making 5 microliter injections. The chemist was wearing gloves and safety glasses at the time. The chemist began these studies at 11:30 AM. The chemist broke for lunch and returned to the experiment at 12:45 PM and felt severe intestinal distress with diarrhea and nausea but no vomiting. The chemist also reported mental confusion. The chemist looked up the symptoms of nicotine poisoning in the Merck Index and felt that they matched her symptoms. [Ed. note: acetonitrile exposure may also produce these symptoms.] The chemist chose not to go for, a medical evaluation. The chemist soon felt better and returned to the experiment. The occurrence report states that there is no way to determine whether the symptoms were due to chemical exposure or to other factors. In addition, the chemist could not recall spilling any of the liquid on the skin but speculated that she could have inadvertently touched her face with a gloved hand or gotten some on a pen that was being used. Due to the nature of the chemical compound the chemist was working with, and due to the fact that chemical contamination cannot be excluded as the cause of the symptoms, this incident was reported. Further studies with epibatadine and its derivatives have been suspended pending a safety review.

Also, for the second consecutive month, an explosives handling occurrence took place at Livermore (SAN--LLNL-LLNL-1997-0007). This occurrence was discussed in Operating Experience Weekly Summary (OEWS) 97-07. Managers of facilities where chemical inventories are being updated and/or surplus or expired chemicals are being disposed, are urged to review this occurrence and the OEWS discussion.

Additional information regarding these occurrences and others will be discussed in an upcoming Quarterly Review. As occurrence reports are finalized, lessons learned will be communicated.

[Signature of]

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Office of Field Support

Attachment

Note to Distribution:

This document is being electronically distributed. If you want to receive the document electronically, or to be removed from distribution, or to add another person, or to change your address, please contact **John Usher** Voice: 516-344-2096, Fax: 516-344-3957, E-mail:usher@bnl.gov at Brookhaven National Laboratory.

The DOE Chemical Safety Program homepage is now available. The Internet address for this site is http://dewey.ti s.eh.doe.gov/ web/chem_safety/. This report is accessible using the **Chemical Occurrences** link via the homepage. **It is intended that the next Monthly (March) will be the last distributed via the U.S. Mail. In the future, E-mail notification will be provided when new reports are issued and posted on the homepage. Please contact John Usher to be placed on e-mail distribution, and please advise if this new policy will cause problems for you.**

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